



SEQUENCE LISTING

<110> Russell, William
Klaenhammer, Todd

<120> LACTOBACILLUS BETA-GLUCURONIDASE AND DNA ENCODING THE SAME

<130> 5051.514DV

<140> US 10/673,935

<141> 2003-09-29

<150> US 09/862,660

<151> 2001-05-21

<150> US 60/206372

<151> 2000-05-23

<160> 14

<170> PatentIn version 3.2

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<212> DNA

<213> Lactobacillus gasseri

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<221> CDS

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att caa aat aaa tat cgg ttt aac act tta atg aat ggc act tgg caa 221
Ile Gln Asn Lys Tyr Arg Phe Asn Thr Leu Met Asn Gly Thr Trp Gln
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Phe Glu Thr Asp Pro Asn Ser Val Gly Leu Asp Glu Gly Trp Asn Lys
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gag ttg cct gat cct gaa gaa atg cct gta cca ggt acg ttt gca gaa 317
Glu Leu Pro Asp Pro Glu Glu Met Pro Val Pro Gly Thr Phe Ala Glu
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tta act act aag cga gac cgt aaa tac tat act gga gac ttt tgg tat 365
Leu Thr Thr Lys Arg Asp Arg Lys Tyr Tyr Thr Gly Asp Phe Trp Tyr
60 65 70

caa aaa gac ttc ttt att cct tca ttt cta aag aag aaa gaa ctt tat 413
Gln Lys Asp Phe Phe Ile Pro Ser Phe Leu Lys Lys Lys Glu Leu Tyr
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gca aca att acc tac aat atc gag gca aat aat aat gct gaa ttt aaa Ala Thr Ile Thr Tyr Asn Ile Glu Ala Asn Asn Asn Ala Glu Phe Lys 200 205 210 215	797
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tgt ttt aga agc agt cac tat cct tac gcc gaa gaa tgg tat caa tat	1181

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Leu	Asn	Arg	Ser	Ile	Thr	Asn	Phe	Leu	Asn	Val	Thr	Asn	Ser	Asn	Gln		
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Val	Ile	Ala	Trp	Ser	Leu	Phe	Asn	Glu	Pro	Glu	Ser	Thr	Thr	Gln	Glu		
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Pro	Gln	Asn	Arg	Pro	Tyr	Thr	Gly	Thr	Leu	Val	Met	Gly	Ser	Gly	Pro		
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tat	tat	ggc	tgg	tac	gtt	gct	ggc	ggc	cct	gaa	atc	gtt	aat	gct	aaa	1613	
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His	Arg	Leu	Pro	Asp	Glu	Met	Trp	Ser	Gln	Glu	Tyr	Gln	Asn	Glu	Tyr		
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Glu	Leu	Val	Trp	Asn	Phe	Ala	Asp	Phe	Lys	Thr	Ser	Glu	Gly	Ile	Met		
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cgt	gtt	ggc	ggc	aac	gat	aaa	gga	att	ttt	act	cgc	gat	cgt	gaa	cct	1901	
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Val Pro Gly Thr Phe Ala Glu Leu Thr Thr Lys Arg Asp Arg Lys Tyr			
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Tyr Thr Gly Asp Phe Trp Tyr Gln Lys Asp Phe Phe Ile Pro Ser Phe			
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Leu Lys Lys Lys Glu Leu Tyr Ile Arg Phe Gly Ser Val Thr His Arg			
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Ala Lys Val Phe Ile Asn Gly His Glu Val Gly Gln His Glu Gly Gly			
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Phe Leu Pro Phe Gln Val Lys Ile Ser Asn Tyr Ile Asn Tyr Asp Gln			
115	120	125	
Thr Asn Arg Val Thr Val Leu Val Asn Asn Glu Leu Ser Glu Lys Ala			
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Ile Pro Cys Gly Thr Glu Glu Ile Leu Asp Asn Gly Gln Lys Leu Ala			
145	150	155	
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Gln Pro Tyr Phe Asp Phe Phe Asn Tyr Ser Gly Ile Met Arg Asn Val
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Trp Leu Leu Ala Leu Pro Gln Ser Gln Ile Thr Asn Phe Lys Leu Asn
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Tyr Gln Leu Ala Asn Asn Lys Ala Thr Ile Thr Tyr Asn Ile Glu Ala
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Asn Asn Asn Ala Glu Phe Lys Val Thr Leu Phe Asp Asn Gln Lys Glu
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Val Ala Cys Ala Thr Ser Lys Asn Thr Ser Ser Leu Thr Ile Lys Asn
 225 230 235 240

Pro His Leu Trp Ser Pro Asn Asp Pro Tyr Ser Tyr Lys Ile Lys Ile
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Glu Met Leu Glu Asp Gly Lys Thr Val Asp Glu Tyr Thr Asp Lys Ile
 260 265 270

Gly Ile Arg Thr Val Lys Ile Val Asn Asp Lys Ile Leu Leu Asn Asn
 275 280 285

His Pro Ile Tyr Leu Lys Gly Phe Gly Lys His Glu Asp Phe Asn Val
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Leu Gly Lys Ala Val Asn Glu Ser Ile Ile Lys Arg Asp Tyr Glu Cys
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Met Lys Trp Ile Gly Ala Asn Cys Phe Arg Ser Ser His Tyr Pro Tyr
 325 330 335

Ala Glu Glu Trp Tyr Gln Tyr Ala Asp Lys Tyr Gly Phe Leu Ile Ile
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Asp Glu Val Pro Ala Val Gly Leu Asn Arg Ser Ile Thr Asn Phe Leu
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Asn Val Thr Asn Ser Asn Gln Ser His Phe Phe Ala Ser Lys Thr Val
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Pro Glu Leu Lys Lys Val His Glu Gln Glu Ile Lys Glu Met Ile Asp
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Arg Asp Gln Arg His Pro Ser Val Ile Ala Trp Ser Leu Phe Asn Glu
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Pro Glu Ser Thr Thr Gln Glu Ser Tyr Asp Tyr Phe Lys Asp Ile Phe
420 425 430

Ala Phe Ala Arg Lys Leu Asp Pro Gln Asn Arg Pro Tyr Thr Gly Thr
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Trp Gln Asn Leu Lys Leu Asn Lys Pro Phe Val Phe Thr Glu Phe Gly
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